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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/692,697
Filing Date	10/23/2003
First Named Inventor	Krzysztof Przytula
Art Unit	2128
Examiner Name	Shambhavi K Patel
Attorney Docket Number	HRL135

Total Number of Pages in This Submission 7

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☑ Amendment/Reply	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☑ Other Enclosure(s) (please Identify below):
☐ Express Abandonment Request	☐ Request for Refund	Return Receipt Postcard
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	Declaration under 37 CFR 1.131
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)	Remarks	
☐ Reply to Missing Parts/ Incomplete Application		
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Tope-McKay & Associates
Signature	
Printed name	Cary Tope-McKay
Date	02/12/2008
Reg. No.	41,350

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Cary Tope-McKay	Date	02/12/2008

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.   :   **10/692,697**

Filing Date   :   **23 OCTOBER 2003**

First Named Inventor   :   **WOJTEK PRZYTULA**

Firm Docket No.   :   **HRL135**

Art unit   :   **2128**

Examiner   :   **PATEL, SHAMBHAVIK**

TITLE: **EVALUATION OF BAYESIAN NETWORK MODELS FOR DECISION SUPPORT**

RE: **SIGNED DECLARATION UNDER 37 CFR 1.131**

United States Patent and Trademark Office

ATTN: Shambhavik Patel

BOX RESPONSES

Washington, D.C. 20231

Dear Examiner:

A response was timely filed to the Office Action dated September 27, 2007. The response included a signed declaration under 37 CFR 1.131. The declaration included the signature of one of the inventors, Denver Dash. Included herewith is a signed declaration under 37 CFR 1.131 by the other inventor, Wojtek Pryztula, to further support the response. The Declaration references Appendix A, which is an Invention Disclosure that was submitted with the timely filed response.

The Applicants respectfully request that the Examiner accept and enter the attached declaration within the file.
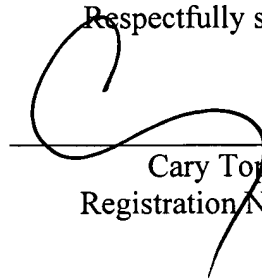
Closing Remarks:

In the event that the Examiner wishes to discuss any aspect of this letter, or believes that a conversation with either the Applicants or Applicants' representative would be beneficial the Examiner is encouraged to contact the undersigned at the telephone number

5   indicated below.

Respectfully submitted,

2/12/08

10   Date   Cary Tope-McKay
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DECLARATION UNDER 37 CFR 1.131

We, Wojtek Przytula and Denver Dash, hereby declare that <u>we conceived the subject matter of Patent Application No. 10/692,697 at least as early as the date of March 4, 2002, and by acts undertaken wholly in the United States of America, have diligently pursued this invention with the purpose of its actual reduction to practice on September 13, 2002, and thereafter until the filing date of October 23, 2003.</u>

The invention that is the subject of this patent application was captured in an Invention Disclosure, included herewith as Appendix A. Referring to Appendix A, as noted on sheet 2, section 3, I declare that we first completed a conception of the invention by March 4, 2002. As noted on sheet 2, section 4, we thereafter diligently pursued the invention until its actual reduction to practice on September 13, 2002, and thereafter until the filing date of October 23, 2003. Evidence of the actual reduction to practice can be found on sheet 17, which includes a description of an implementation of the present invention, including experimental results.

As noted on sheet 2, sections 6 and 7, at the time of preparing the invention disclosure, we were unaware of any publications or public presentations related to the invention.

<u>The invention disclosure (i.e., Appendix A) provides support for the subject matter in all of the claims of Patent Application No. 10/692,697.</u>

For example, independent Claim 1 discloses a method for automatically evaluating Bayesian network models for decision support. Claim 1 includes an act of receiving a Bayesian Network (BN) model including evidence nodes and conclusion nodes, where the conclusion nodes are linked with the evidence nodes by causal dependency links, and where the evidence nodes have evidence states and the conclusion nodes have conclusion states. <u>This corresponds to the description of the BN model on page 8.</u> The relevant portion of the invention disclosure (Appendix A) states that "the invention is a method

for evaluation of the Bayesian Network (BN) model and the decision domain" (referring to page 8, lines 1 to 2 of the invention disclosure). Thus, a Bayesian Network consists of evidence nodes, also known as observation nodes (nodes whose state can be observed to obtain evidence), and conclusion nodes, also known as failure nodes (nodes whose resulting state reflects either failure or success).

Claim 1 also includes an act of setting the states of the conclusion nodes (referred to as 'failure nodes' on the invention disclosure) to desired conclusion states and determining, by propagating down the causal dependency links, a corresponding probability of occurrence of evidence states of the evidence nodes (referred to as 'observation nodes' on the invention disclosure) and producing, from the probability of occurrence, a plurality of samples of most likely states of the evidence nodes (referred to as 'observation nodes' on the invention disclosure)." This corresponds to the Failure propagation step disclosed by the invention disclosure on page 8, lines 16 to 25. Specifically, the invention disclosure states (referring to page 8, lines 16 to 25) that "in failure propagation step we perform the following computation steps: (a) select one or more specific failures (this corresponds in Claim 1 "to select desired conclusion state"); (b) in the BN we set the states of nodes representing the failures to defective and set the states of the remaining failure nodes that are the root nodes of the BN to the state non-defective (this corresponds in Claim 1 to "setting the states of the conclusion nodes, failure nodes, to desired conclusion states"); (c) determine the state of the remaining nodes using Monte Carlo simulation, find the next node in the list of temporally ordered nodes, and using BN inference, calculate the posterior distribution of that node (evidence node) given the evidence so far (this corresponds in Claim 1 to "determining, by propagating down the causal dependency links, a corresponding probability of occurrence of evidence states of the evidence nodes"); and (d) determine the state of the node by Monte Carlo sampling of its posterior distribution and stop when states of all nodes (evidence nodes) have been determined (this corresponds in Claim 1 to "producing, from the probability of occurrence, a plurality of samples of most likely states of the evidence nodes").

Furthermore, Claim 1 claims "setting the states of the evidence nodes to states corresponding to the plurality of samples of the evidence states, and propagating the evidence states back up the causal dependency links to the conclusion nodes, to obtain a plurality of probabilities of the resulting states of the conclusion nodes." This corresponds to the "diagnosis step" disclosed by the invention disclosure on page 8, lines 26 to 30. Specifically, the invention disclosure states (referring to page 8, lines 26 to 30) that the failure propagation step is followed by a diagnosis step, wherein the diagnosis step consists of the following computation steps: (a) assume the states of all the observation nodes (evidence nodes) to be those determined in the failure propagation step (this corresponds in Claim 1 to "setting the states of the evidence nodes (observation nodes) to states corresponding to the plurality of samples of the evidence states"); and (b) compute posterior probability for all the failure nodes, not only the nodes selected as "defective" in the failure propagation step, given the states of the observation nodes (evidence nodes) (this corresponds in Claim 1 to "propagating the evidence states back up the causal dependency links to the conclusion nodes or failure nodes, to obtain a plurality of probabilities of the resulting states of the conclusion nodes or failure nodes").

In addition, independent Claim 1 discloses "outputting a representation of the plurality of the probabilities of the states of the conclusion nodes." This corresponds to the "visualization step" disclosed by the invention disclosure on page 9, lines 1 to 22. Specifically, the invention disclosure states (referring to page 9, lines 1 to 4) that the failure propagation step and the diagnosis step are followed by a third step, the visualization step, which is performed when all the computations for the first two steps are completed. The invention disclosure further states that there are two outputs produced by the visualization step complete graph for failure probabilities, and 2D and 3D matrices of averaged failure probabilities (this corresponds in Claim 1 to "outputting a representation of the plurality of the probabilities of the states of the conclusion nodes"). Additionally, the invention disclosure clearly presents graphs and plots (referring to pages 12 through 16 of the invention disclosure) illustrating the results obtained with a software implementation of the present invention, which clearly

correspond to "outputting a representation of the plurality of the probabilities of the states of the conclusion nodes," as disclosed by Claim 1.

Regarding the Independent Claims 18, 35, and 52, these claims disclose limitations, in a similar manner as Claim 1, that directly correspond to the "failure propagation, diagnosis, and visualization steps" as described in the invention disclosure. Therefore, the invention disclosure (i.e., Appendix A) provides support for each and every one of the claims in Patent Application No. 10/692,697.

We hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

KWPrzytula (signature)   _January 28, 2008_
Wojtek Przytula   Date

_____   _January 28, 2008_
Denver Dash   Date